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Applications of the Calculus of Factorial Arrangements
I. Block and Direct Product Designs

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ABSTRACT

This paper deals with some applications of a general theory for the analysis of factorial experiments as reported by the authors in the June 1962 issue of the Annals of Mathematical Statistics.

General expressions are given for the usual quantities associated with the analysis of variance for the cases where simple treatments or factorial treatment-combinations are applied to Randomized Blocks, Balanced Incomplete Blocks, Group Divisible designs, and a wide class of Kronecker Product designs.

The main point of the new theory is that, for a wide class of the more practical designs, the complete analysis can be carried out almost by inspection of the normal equations, with no requirement for inverting the normal equations.

The complete version of this paper is published in BIOMETRIKA, Vol. 50, Parts 1 and 2, June 1963.